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UC 149-2

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INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS • OPERATING DIVISION P. O. BOX 579, NIAGARA FALLS, NEW YORK 14302

To (Name) See Attached Distribution List
Division
Location

Date June 9, 1967

Originating Dept. Research and Development Department

Answering letter date

Copy to

Subject Monthly Summary Report
May, 1967

Gentlemen:

Attached is the Asbestos Business Area Monthly Summary Report for May 1967. In addition to the work reported herein, Mr. W. P. Mulvaney, Bound Brook, has issued a report which explains, on the basis of whisker composite techniques, the reinforcing effect occurring above a certain critical volume loading of R-G144 asbestos in plasticized QYSJ vinyl compounds. The Coatings and Intermediates Division has reported that R-G244 can be used as a replacement for Santocel 54 as a thixotrope in a drip rail sealer giving the same degree of adhesion and sag resistance.

Very truly yours,

R. G. Woolery

RGW/bsn
Attach.

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CHEMICALS AND PLASTICS
OPERATIONS DIVISION

UNION CARBIDE CORPORATION

P.O. Box 579, Niagara Falls, N.Y.

Monthly Summary Report
Asbestos Research & Development
May, 1967

TO: (See Attached Distribution List)

FROM: R. G. Woolery

DATE: June 9, 1967

Pulp and Paper

Technical Services were present at two mill trials at Weyerhaeuser Corporation. One, an unsuccessful pitch trial employing High Purity Asbestos and two, a highly successful "T" trial on a printing grade. Sales assistance was provided to 25 paper mills through Europe and the United Kingdom. These contacts were most encouraging, and the majority of the contacts agreed to initiate or continue evaluation with asbestos. In the United States, repulping equipment was set up for pending trials at International Paper Co., Tonawanda, New York and at Time Inc., Springdale, Conn. Both are High Purity trials for retention and sheet improvements. Visits were also made with Sales to Union Camp Paper, Franklin, Va, and Standard Paper Manufacturing, Richmond, Va. to discuss the use of asbestos products at these mills.

An evaluation of Parez 615 and Resichem wet strength resins was made in the paper laboratory for the International Paper Co. in Ticonderoga, New York. The study indicated that wet strength was improved by replacing titanium dioxide with Asbestos "T" in the cellulosic sheet.

Considerable effort this month was devoted to the current Asbestos "T" production products. Comparative studies were run on "T" products of asbestos-TiO_2 ratios of 65/35 and 50/50. The 50/50 mix was found to have a scattering power of 3700 cm^2/g. compared to 3100 for our standard 65/35 product. Because of the unexpected demand for "T" products, it became necessary for the King City mill to obtain TiO_2 from domestic sources. Most of this product was purchased from Titanium Pigments Corp. (Titanox AWD) and was used in both the 65/35 and 50/50 "T" products. A routine evaluation of these "T" products indicated they may be 10% less effective than equivalent products made with the Japanese TiO_2 (Suntiox). These data are currently being reconfirmed in a more detailed test program.

Samples of Asbestos "T" products from various stages in the King City circuit were also tested for scattering power in order to determine at what step the synergistic effect of our "T" products is obtained. The samples included the "T" slurry prior to the filter press, filter press cake, extruded green pellets, and the dried "T" pellet. Only the dried "T" pellet exhibited improvement in light scattering properties. This would indicate that the heat of drying is, in effect, enhancing the optical properties of the "T" products.

The various "T" products were also evaluated in cellulosic sheets containing optical brightening agents. These data show that the optical dyes function more effectively in the presence of the dried "T" product. It has also been shown that the co-flocculation ratio is important and degree of asbestos opening prior to drying is critical.

Discussions with R. T. Vanderbilt Company have been going on concerning the properties of an asbestos-VANSIL (a calcium alumino-silicate) product. They have reported excellent dry opacifying characteristics by co-precipitating the VANSIL on High Purity Asbestos. Cooperative studies are under way within the business framework for possible manufacture of the treated material at King City, and the right of Union Carbide and R. T. Vanderbilt to market the product.

G. L. Dickson

Plastics Applications

Technical Service calls were made in Detroit, Michigan at General Motors, Chrysler, Reichhold Chemicals, M & T Chemicals, Magnus Products, Grow Solvents, J. W. Mortell, Tuff-Kote, and Permalastics. Reichhold reports good results with R-G244 in a boat resin wherein we have an advantage over a competitor's asbestos thickener, Avibest. Grow Solvents reports excellent results with R-G144 in vinyl plastisols with improvements in toughness and abrasion resistance. They also reported a new (undisclosed) application in which they realize savings of more than $1/gal. raw materials costs with the use of R-G144. J. W. Mortell uses R-G144 in vinyl plastisols and asphaltic sealants with good results.

Laboratory studies have shown that competitive asbestos products (Carey 7RF9 and J.M. 7R06) do not reinforce a rigid PVC pipe compound, QGPB-9311, to the same degree as R-G144. Tensile strength, modulus and impact resistance are about 10% lower and the resulting compound is more opaque with the competitive asbestos.

Highly refined asbestos products (30 and 10 mm. cyclone overflow) show marked improvements in their ability to thicken liquid resin systems. They also allow better retention of strength at high loadings than is possible with R-G144 in reinforced vinyls.

Preliminary results by vapor chromatographic techniques indicate that UCC chrysotile asbestos has a specificity of adsorption of

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certain chemical structures. It specifically adsorbs aromatic materials, for example. Laboratory studies are being made to determine the chemical affinities of chrysotile for organic functional groups.

R. E. Byrne

Asbestos Research

Assistance was given the King City mill during its initial test run on R-G244 production. As was the experience in the pilot plant runs, the major problem was making a sufficiently liberated asbestos feed material for the process. A 10-mm. cyclone is being installed in order to produce a satisfactory feed material. Laboratory efforts are continuing to find better ways of rapidly determining particle size distribution of highly liberated asbestos slurries.

Additional laboratory tests have confirmed previous observation that additions of small amounts of aluminum salts cause silica-treated asbestos to become more electronegative.

Studies on the flow properties of asbestos with water-soluble resins such as CMC, polyox, Polymer X-150, etc. have been started. As little as 2% CMC based on the asbestos has shown greatly improved filtration properties in a typical oil well drilling fluid.

S. Chwastiak

Asbestos Development

Resin-Grade product development work included R-G244 and "Dispersion" grades. The R-G244 pilot plant produced 540 pounds of material of which 75% met quality specifications. Associated laboratory studies indicated the following:

1. Slurries of 7% consistency, but containing only 2% plus 10 micron particulates, could not be treated. The present consistency limit is 4%.

2. Nozzle opened slurries, containing less than 5% plus 10 micron particulate, were not amenable to silica treatment at low (2%) consistency.

3. Elevated slurry temperatures, to 138°F, are not detrimental.

4. The pH of 1, 2, and 4% asbestos slurries is a quantitative function of sodium silicate addition and would be a method for continuous process control.

A practical method for packaging opened R-G244 has been developed. It consists in loading a 10-pound quantity into a light gauge, open top polyethylene bag, vacuum deaeration and bag shaping,

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and heat sealing. The polyethylene bags are shipped in corrugated paper cartons sized to hold either 10 or 40 pounds net weight. In addition to the R-G244, three types of dispersion grade asbestos products were prepared and shipped. They consisted of two degrees of fine sized R-G144 with TiO_2 and one ultrafine sized R-G144. This month's shipping totaled 400 pounds of materials of 7 product types in 19 shipments.

Paper product studies included an evaluation of Hi-Sil 404 slurry viscosity relative to Asbestos "T" to determine the utility of paper mill slurry feed systems. Basic components for the high pressure repulper were assembled and tested showing acceptable performance using nozzles up to 0.046" diameter and at feed pressures as low as 900 psig.

The concept of using the particulate co-flocculation and hydrocarbon adsorption characteristics of chrysotile asbestos for air pollution control was implemented with a survey of outside facilities that could assist in evaluating this use.

J. E. Skvarla

Technical Reports Issued in May, 1967

1. Addendum to "Evaluation of PKT" report by G. L. Dickson

2. "Asbestos-Titania Slurry Evaluation in Cellulosic Paper" by F. H. Thompson

3. Addendum to "Asbestos-Titania Slurry Evaluation in Cellulosic Paper" by F. H. Thompson

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